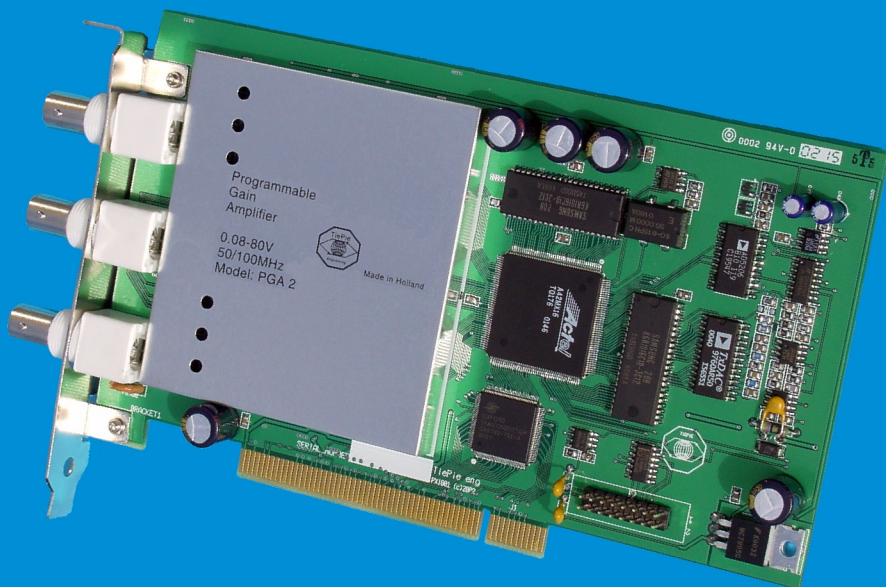


- ARBITRARY WAVEFORM GENERATOR
- STORAGE OSCILLOSCOPE
- SPECTRUM ANALYZER
- MULTIMETER
- TRANSIENT RECORDER

Computer Controlled Measuring Instrument

TP801-AWG



PCI  
Universal Measuring System



# TP801-AWG

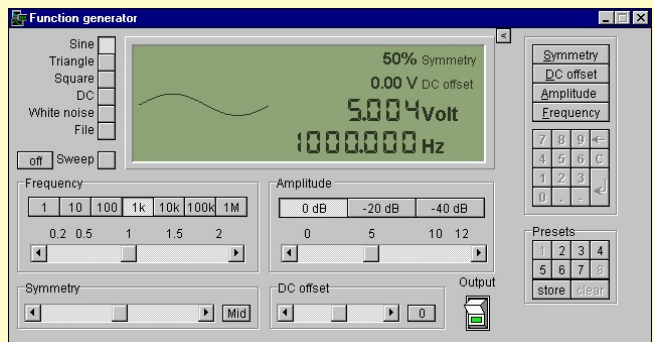
*The HS801-AWG is a powerful computer controlled measuring instrument that consists of four measuring instruments: a Multimeter, Oscilloscope, Spectrum analyzer and Transient recorder. Also an AWG (Arbitrary Waveform Generator) is available. This new powerful and compact measuring instrument can solve almost every measurement problem.*

*With the integrated AWG you can generate any signal you want. The software is easy-to-use and has a lot of analyzing tools that will improve productivity and measuring quality. A large full screen signal display, storage and analyzing complex signals, advanced trigger facilities and great color print out is the new way for measuring and analyzing your signals today.*

## AWG Arbitrary Waveform Generator

The arbitrary waveform generator offers five default signal shapes: sine wave, triangle, square, DC and white noise. The selected signal shape is immediately shown in the display of the generator.

The amplitude of the signal can be freely set between 0 V and 10 V peak. A DC offset between 0 and 10 V can be applied to the signal. Also the symmetry of the signal can be changed, from 1% to 99%. The frequency of the signal can be set from almost 0 to 2 MHz.

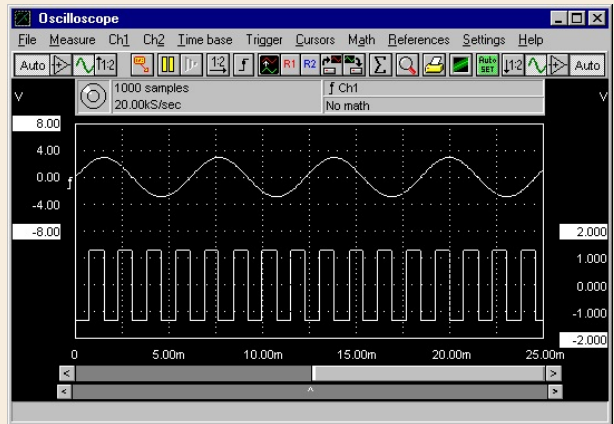


# Digital Storage Oscilloscope

The oscilloscope is an instrument with which electrical voltages varying in time can be displayed. With the oscilloscope time dependent electrical signals can be examined easily.

The 100 MHz sampling oscilloscope has separated voltage input channels, which can be configured individually. It is a digital sampling oscilloscope. That means that the oscilloscope takes samples at fixed times. From each sample the value is determined and the size is displayed at the screen. The screen is filled with all samples. Between two adjacent samples on the screen a line is drawn. The speed at which the samples are taken, is adjustable.

Cursors are available to perform voltage, time or frequency measurements on the displayed signal.



True RMS	2.072 V
Peak-Peak	5.865 V
Mean	0.000 V
Maximum	2.933 V
Minimum	-2.933 V
dBm	46.326 dBm
Power	42.913 W
Crest	1.416
Frequency	162.963 Hz
Duty cycle	58.53 %
Rise time left	1.810 msec
Rise time right	1.810 msec
Sample time left	12.280 msec
Sample time right	85.910 msec
Sample time diff.	73.630 msec
Cursor frequency	13.581 Hz
Voltage left	0.014 V
Voltage right	0.009 V
Voltage diff.	0.006 V
Slew rate left	59161E-03 V/us
Slew rate right	50215E-03 V/us

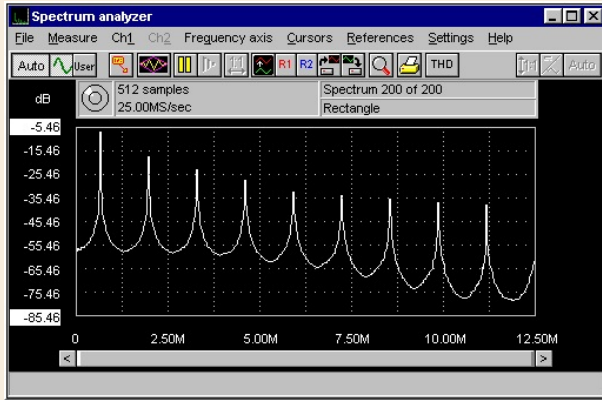


When a quick indication of the input signal is required, a simple click on the auto setup button will immediately give a good overview of the signal. The auto setup function ensures a proper setup of the time base, the trigger levels and the input sensitivities.

Two sophisticated cursor read outs have 21 possible read outs. Besides the usual read outs, like voltage and time, also quantities like rise time and frequency are displayed.

T&M Instruments For The PC

# Spectrum Analyzer



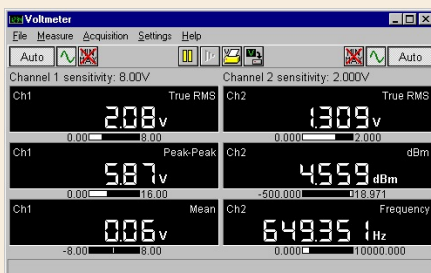
The common way to examine electrical signals is in the time domain, using an oscilloscope.

The time domain is used to determine amplitude, time and phase information, which is necessary to describe the behaviour of an electrical system.

Not all electrical systems can be characterised in the time domain. Circuits like filters, amplifiers, oscillators, mixers,

modulators and detectors can be characterised best by their frequency behaviour. That frequency behaviour is best obtained by observing the electrical signals in the frequency domain. To display the frequency domain, an instrument is needed that can distinguish different frequencies from each other and measure the signal size at the different frequencies. An instrument that can display the frequency domain is the spectrum analyzer. It graphically displays voltage as a function of frequency.

## Voltmeter



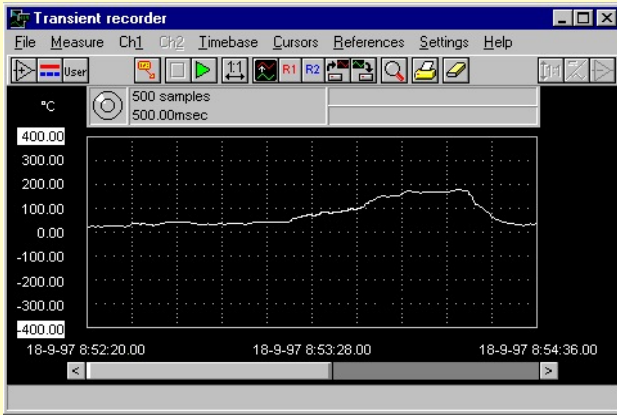
If from the input signals only the size is important and not the time information or frequency components, a voltmeter is a suitable instrument to measure with. The software is equipped with a two channel digital voltmeter. The voltmeter functions as follows:

1: A measurement is performed (minimal 200 samples). 2: The measured data is processed, e.g. for calculating the RMS value or the mean

value. Eleven different operations are available. 3: The calculated values are displayed, e.g. add CH1 and CH2 and display on channel one. Sixteen different display methods are available.

For each channel the voltmeter has up to three displays to present the measured and calculated values. The value displayed in a display is fully configurable. Also for each display a bar graph is available, to give a quick overview of the signal size in relation to the input range.

# *Transient Recorder*



For measuring slowly changing signals (e.g. the temperature change in a room) the transient recorder is the most suitable instrument.

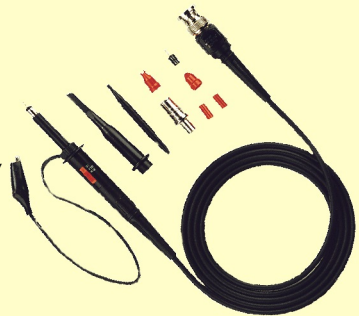
The transient recorder is a two channel, direct registering measuring instrument, displaying the changes of the input signal graphically on the screen or on paper.

The transient recorder measures at settable, fixed times and processes the measured value if necessary. The number of measurements to be taken is also settable.

The transient recorder measures the input signals at adjustable times. The time between two measurements is adjustable from 0.01 second to 500 seconds. The number of samples is also adjustable from 1 to 65520. The maximum measuring time is  $500 \text{ sec} \times 65520 \text{ samples} = 32760000 \text{ seconds}$  (379 days).

## *Probe HP9060 1:1-1:10*

The probe HP9060 is a 1:1-1:10 selectable passive-high impedance oscilloscope probe designed and calibrated for use on the TP801-AWG. The probe incorporates a three position slide switch in the head which selects the attenuation of X1, X10 or a ground reference position. The X10 attenuation is achieved by means of an attenuation network. The TP801-AWG is standard delivered with two HP9060 probes.



# Specification TP801-AWG PCI

## TP801-AWG PCI Software

### Oscilloscope

Bandwidth: 50 MHz  
 Sample rate maximum: 100 MHz  
 Sample rate minimum: 0.01 Hz  
 Time base: 10 nsec/div to 655 ksec/div  
 Time base magnification: 1 x to 50 x  
 Y-axis setting: drop and drag  
 Pre samples: 0 to 65520  
 Post samples: 0 to 65520  
 Trigger time out: 0 to infinite sec.  
 Trigger input: CH1, CH2, EXT, keyboard  
 Measuring modes:  
 CH1, CH2, CH1 + CH2, CH1-CH2,  
 CH2-CH1 and X-Y mode.  
 Referency: CH1, CH2

### Spectrum analyzer

Frequency range: 50 MHz to 0.003 Hz  
 Frequency accuracy: <0.1%  
 Amplitude axis: linear / dB  
 Frequency axis: linear, logarithmic  
 octave bands, 1/3 octave bands  
 FFT Windows: rectangle, Hanning,  
 Hamming, Blackman, Bartlett  
 FFT points: 16 to 16384  
 Distortion calculations: 1 to 100  
 harmonics in dB or %  
 Averaging: 1 to 256 spectra  
 Measuring method: normal, max mode

### True RMS voltmeter

Accuracy: 2% +/- 1 LSB  
 Display methods:  
 11 math functions available  
 Frequency range: 10 Hz to 25 MHz  
 Number of displays:  
 1 to 6 user selectable

### Transient recorder

Measure points: 1 to 65520  
 Measure time (between to points):  
 0.01 sec to 500 sec

### Cursor read out

Read outs: True RMS, Peak-Peak, Mean,  
 Maximum, Minimum, dBm, Power,  
 Crest factor, Frequency, Duty cycle,  
 Rise time left and right, slew rate left  
 and right, THD (in spectrum analyzer)  
 Fonts: user selectable  
 Colours: background user selectable

### Comment

User text: three text lines for every  
 print out  
 Comment text: three special text lines  
 Text balloons: user selectable text,  
 colours and arrows

### Print out

Size: full printer size (A4, A3)  
 Colours: black / white and colour prints

## TP801-AWG PCI Hardware

### Aquisition system

Max Sample rate: 100 MHz  
 Memory: 64 kWord  
 Input sensitivity: 0.1 to 80 Volt full scale  
 Resolution: 8 bits, 0.39%  
 Accuracy: 1 % ± 1 LSB  
 Input impedance: 1 Mohm / 30 pF  
 Input coupling: AC / DC  
 Analog bandwidth: 50 MHz  
 Maxium input voltage: ±200 volt  
 (DC+AC peak <10KHz)

### Triggering

Trigger modes: free run, delayed run,  
 auto, single, edge triggering, window  
 peak, TV triggering, external  
 Trigger system: digital, two trigger levels  
 Trigger source: CH1, CH2, External and  
 Keyboard  
 Trigger level: 0 to 100% full scale  
 Trigger resolution: 0.39% (8 bits)  
 Pre triggering: 0 to 65520 samples  
 Post triggering: 0 to 65520 samples  
 Trigger delay: 0 to 65520 samples

### Arbitrary waveform generator

Sample rate: 0-25 MHz  
 Resolution: 10 bit

Output impedance: 50 Ohm  
 Frequency range: 0-2 MHz  
 Frequency step: 0.01Hz  
 Output amplitude: 0-10 volt  
 Amplitude step: 0-0.1 Volt 4096 steps  
 0.1-0.9 Volt 4096 steps  
 0.9-10 Volt 4096 steps  
 DC level: 0-10 Volt in 4096 steps  
 Waveforms: sine, triangle, square, noise,  
 DC and user defined (64 Kword)  
 Symmetry: 1-99%, 1% steps

### General

Power supply: From PCI BUS  
 +5 (0.9A), +12 and -12Volt (0.1A)  
 Power consumption: 7 Watt  
 Connection: PCI slot 32bit

Ambient temperature: 15 °C to 25 °C  
 (59 °F to 77 °F)  
 Dimensions: 200x130x22mm (H x L x W)  
 Weight: 170 gram (6 ounce)

### Ordering information

The TP801-AWG is direct connected to a  
 PCI slot of a PC. Windows based  
 software can be installed and the  
 measuring can be started.

The TP801-AWG is delivered with:  
 -A complete software package for  
 Windows 3.x/95/98/2000/NT/XP  
 -Instruction manual  
 -Two switschable (1:1 and 1:10)  
 oscilloscope probes

Ordering code: TP801-AWG PCI

FOR MORE INFORMATION, DEMO SOFTWARE, SOURCE CODE AND DLL'S SEE ON OUR INTERNET PAGE: [HTTP://WWW.TIEPIE.NL](http://WWW.TIEPIE.NL)



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